Strathmore
UNIVERSITY

STRATHMORE INSTITUTE OF MATHEMATICAL SCIENCES
BBS FINANCIAL ECONOMICS/ BBS FINANCIAL ENGINEERING
2022 APRIL SPECIAL EXAMS
BSE 2106: INTERMEDIATE MICROECONOMICS

DATE: 9th May,2022 **TIME: 2 hours**

INSTRUCTIONS:

1. This examination consists of **FIVE** questions, from page 1 to 3.
2. Answer **Question ONE (COMPULSORY)** and any other **TWO** questions.

Question One

a) Distinguish between the following pair of concepts
   i) Interior and boundary solution (4 marks)
   ii) Pareto efficient and Pareto improvement points (2 marks)
   iii) Budget line and budget constraint (1 marks)

b) What type of commodities have their indifference curve with the following behaviour of marginal rate of substitution (MRS)
   i) MRS is everywhere infinite
   ii) MRS is either zero or infinite or nothing in between
   iii) MRS is constant
   iv) MRS is diminishing
   (8 marks)

c) Implicit to the concept of Marginal rate of technical substitution is the concept of marginal product. Using an isoquant whose output is a function of capital (K) and labour (L) and is given by $\bar{y} = f(K,L)$ .Show that $MRTS = \frac{\Delta K}{\Delta L} = -\frac{MP_L}{MP_K}$ (5 marks)

d) A firm is producing output according to the following production function $f(K,L) = K^a L^b$. Given that the factor prices for K and L are r and w respectively. Find the unconstrained input demand functions and the output supply function for this firm (10 marks)

Question Two

a) Suppose that a consumer has a demand function for good X of the form $X = 15 + \frac{Y}{12P}$. Where Y is income level and P is the price of X. Let his original income be KES144 per day and let price of good X be KES3 per unit. Suppose the price of good X falls to KES2 per unit. Assuming that X is a normal good, determine the Slustky's income and substitution effects of price change and use a well labeled diagram to show these effects (14 marks)

b) Use diagram and explanation to derive the choice of input and output levels in the short run period of production for a firm which is after profit maximization (6 marks)

Question Three

a) Use a well labeled diagram to demonstrate that monopolies are a cost to the society (consumers and producers) (8 marks)

b) The short run production function for a firm is given as follows: $y = 10L^2$. L is labour whose reward is 400 per unit. The price of output is KES50 per unit. What is the profit maximizing quantity of labour? (6 marks)

c) Determine the equilibrium quantities of commodities X and z for a consumer whose total utility U and other relevant variables are given below
$U = 20x - 4z^2 + 40z - x^2$, income level $Y = KES48$, price of X, $P_x = KES2$ and price of z, $P_z = KES4$. (6 marks)

Question Four

a) In pure exchange, improving the welfare of an individual is only possible at the expense of the other if an allocation is Pareto efficient. Using the Edge worth box, explain how Pareto efficient allocation is achieved through exchange. (10 marks)

b) Under what conditions would price discrimination be effective? Explain (6 marks)

c) What difference in pricing strategy that makes a firm in perfect competition to make normal profits in the long run but a monopolist to make supernormal profits (4 marks)

Question Five

a) A farmer has been using 2 employees and1 tractor to produce 1000 bags of maize. If the farmer increases the employees to 4 and the tractors to 2. What would be the nature of returns to scale if production rose to:
   i) 2000 bags
   ii) 1500 bags
   iii) 3000bags (9 marks)

b) Interpret the parameters in the following production function $Q = f(x, y) = 148.41x^{0.5}y^{0.8}$ (6 marks)

c) Briefly explain diagrammatically how we determine consumer's equilibrium for linear preferences by taking only one example (5 marks)